

Adler Consulting,
235 Main Street
White Plains, NY 10601-2401

Transportation Planning & Traffic Engineering, PLLC

Tel # (914) 997-8510
Fax # (914) 997-7140

SUPPLEMENTAL
TRAFFIC *and* PARKING STUDY

Open Door Medical Offices Relocation
Village of Sleepy Hollow, New York

Prepared for:
Open Door Family Medical Center, Inc.

March 6, 2013
Project 111229

Table of Contents

<i>A. Introduction</i>	<i>1</i>
<i>B. Project Description</i>	<i>2</i>
<i>C. Scope of Study</i>	<i>3</i>
<i>D. Field Studies</i>	<i>6</i>
<i>E. Peak Hour</i>	<i>7</i>
<i>F. Existing Traffic and Pedestrian Volumes</i>	<i>7</i>
<i>G. Capacity Analyses Procedures</i>	<i>8</i>
<i>H. Existing Traffic Operating Conditions</i>	<i>11</i>
<i>I. Vicinity Developments</i>	<i>14</i>
<i>J. No-Build Traffic Volumes</i>	<i>15</i>
<i>K. No-Build Capacity Analysis Results</i>	<i>16</i>
<i>L. Proposed Project Traffic</i>	<i>19</i>
<i>M. Future Traffic Operating Conditions</i>	<i>21</i>
<i>N. Parking Data Collection</i>	<i>24</i>
<i>O. Conclusions</i>	<i>30</i>
<i>Appendix</i>	<i>31</i>

List of Figures

<i>Figure</i>	<i>Title</i>	<i>Following Page</i>
1.	<i>Site Location Map</i>	1.
2.	<i>Saturday Peak Hour Traffic Volumes - September 2012</i>	7.
3.	<i>Pedestrian Volumes, Saturday Peak Hour</i>	8.
4.	<i>Vicinity Development Traffic Volumes</i>	15.
5.	<i>No-Build Saturday Peak Hour Traffic Volumes</i>	15.
6.	<i>Project-Generated Traffic Volumes</i>	20.
7.	<i>Build Saturday Peak Hour Traffic Volumes</i>	21.

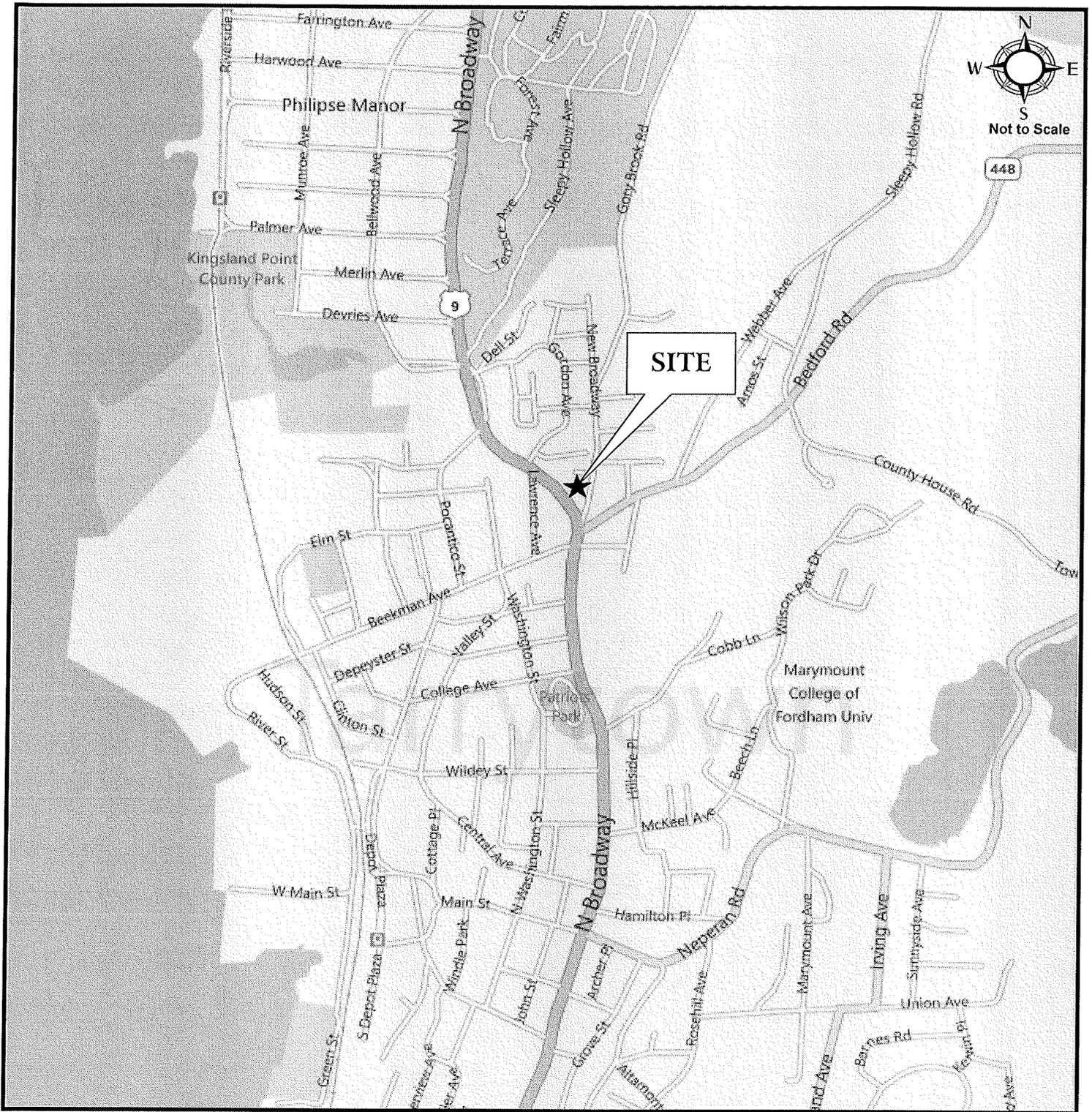
List of Tables

<i>Table</i>	<i>Title</i>	<i>Page</i>
1.	<i>Level-of-Service Summary, Existing Conditions</i>	13.
2.	<i>Level-of-Service Summary, No-Build Conditions</i>	17.
3.	<i>Project generated Peak Hour Vehicular Trip Summary</i>	20.
4.	<i>Level-of-Service Comparison</i>	23.
5.	<i>On-Street Parking Supply and Demand (September2012)</i>	26.

A. INTRODUCTION

This letter report has been prepared by Adler Consulting to supplement the June 28, 2012 Traffic Impact Study (the June 28th Study) for the relocation of the existing Open Door Family Medical Center from its current location at 80 Beekman Avenue to 300 North Broadway, in the Village of Sleepy Hollow, New York (See Figure 1- Site Location Map). The June 28th Study addresses the potential impacts the relocated Open Door facility would have on local traffic and parking conditions during weekdays in its new location. This letter report addresses such impacts on Saturdays. On a typical Saturday, the Open Door anticipates operating between 8:30 a.m. and 2:30 p.m. and staffing its office with one (1) doctor and to provide services for an average of three (3) clients per hour.

In order to determine the impacts, **Adler Consulting** conducted turning movement counts and pedestrian counts on a typical Saturday. In addition, **Adler Consulting** reconnoitered within approximately one-quarter mile of the proposed Site to collect local parking demand and availability data. The Saturday analyses conducted for this



Project:
Open Door
 Sleepy Hollow, NY

Title:
Site Location Map

Prepared By:
Adler Consulting, White Plains, NY

Transportation Planning & Traffic Engineering, PLLC

FIGURE 1

study and contained herein indicate that the proposed relocation to the 12,389 square feet (sf)¹ facility from the current 5,000 sf facility would not have a significant impact on the area-wide traffic operating conditions nor on local parking conditions.

B. PROJECT DESCRIPTION

The proposed Sleepy Hollow Open Door Family Medical Center is being developed on a parcel located at the intersection of North Broadway and New Broadway. The Project Site would consist of a total of 12,389 sf on two levels. Access to the upper and lower levels of the space would be from the existing driveway and the at-grade parking spaces on the premises. The upper level would have restricted emergency pedestrian egress only onto North Broadway using a door with a “panic-bar.”

¹ The reference to 12,389 square feet is to the gross square footage of the building at 300 North Broadway. The building’s floor area (as that term is defined in the Village Zoning Ordinance) is 11,989 sf. Under the Village Zoning Ordinance, the required number of parking spaces is calculated based on the building’s floor area, not the total square footage. Floor area excludes the area of stairways, cellars and similar parts of a building.

C. SCOPE OF STUDY

This traffic study follows standard engineering principles and practices and examines the potential traffic and parking impacts associated with the proposed Saturday operation of the Open Door Family Medical Center at its new location. During the course of this study, **Adler Consulting** performed the following tasks:

- Collected manual intersection turning counts and pedestrian counts during the midday peak period on a typical Saturday for the intersections considered to be strategically important to define the impacts of the proposed development;
- Categorized the traffic data and determined the highest period of adjacent street traffic for the Peak Saturday Highway Hour (Existing Conditions);
- Projected the Saturday Existing traffic volumes to the Horizon Year using the generalized annual growth rate used in the June 28th Study,

which was established in consultation with the Village of Sleepy Hollow planning consultant;

- Identified planned projects that were pending when the application was filed which are anticipated to affect traffic flows in the vicinity of the Site;
- Added the traffic from the adjacent developments to the Horizon Year data to determine the Saturday “No-Build” Condition traffic volumes (to be conservative, the trip generation data for the Weekday Peak AM Hour were also used for the Saturday Peak Hour);
- Assigned the project-generated trips for a Saturday to the roadway system in accordance with the arrival/departure traffic patterns that were previously observed at the Site (again to be conservative, the trip generation estimates previously calculated for the Weekday Peak AM Hour were also used for the Saturday Peak Hour);

- Added additional traffic volumes to account for the shuttle bus service that is expected to transport staff from the Phelps Memorial Hospital Garage to the Family Medical Center on Saturdays;
- Executed intersection capacity analyses for the Existing, No-Build and Build conditions to determine future operating conditions during the Saturday Peak Highway Hour for the intersections of Lawrence Avenue/Gordon Avenue with North Broadway; New Broadway with North Broadway/Bedford Road; and, Beekman Avenue/Hudson Terrace with North Broadway;
- Conducted an inventory of the number of on-street parking spaces available on a typical Saturday within approximately one-quarter mile of the Proposed Site;
- Collected on-street parking demand data on a typical Saturday in the near vicinity of the Proposed Site; and,

- Analyzed the data to determine whether sufficient parking spaces are available.

D. FIELD STUDIES

I. VEHICULAR DATA COLLECTION

Turning movement counts were collected on Saturday, September 15, 2012, every 15 minutes between 11:00 a.m. and 1:00 p.m. at the intersections of North Broadway with Lawrence Avenue/Gordon Avenue; North Broadway with New Broadway/ Bedford Road; and, North Broadway with Beekman Avenue/Hudson Terrace. No unusual weather or traffic events were recorded during these times. Therefore, the data collected is assumed to be representative of field conditions on a typical Saturday.

2. PEDESTRIAN DATA COLLECTION

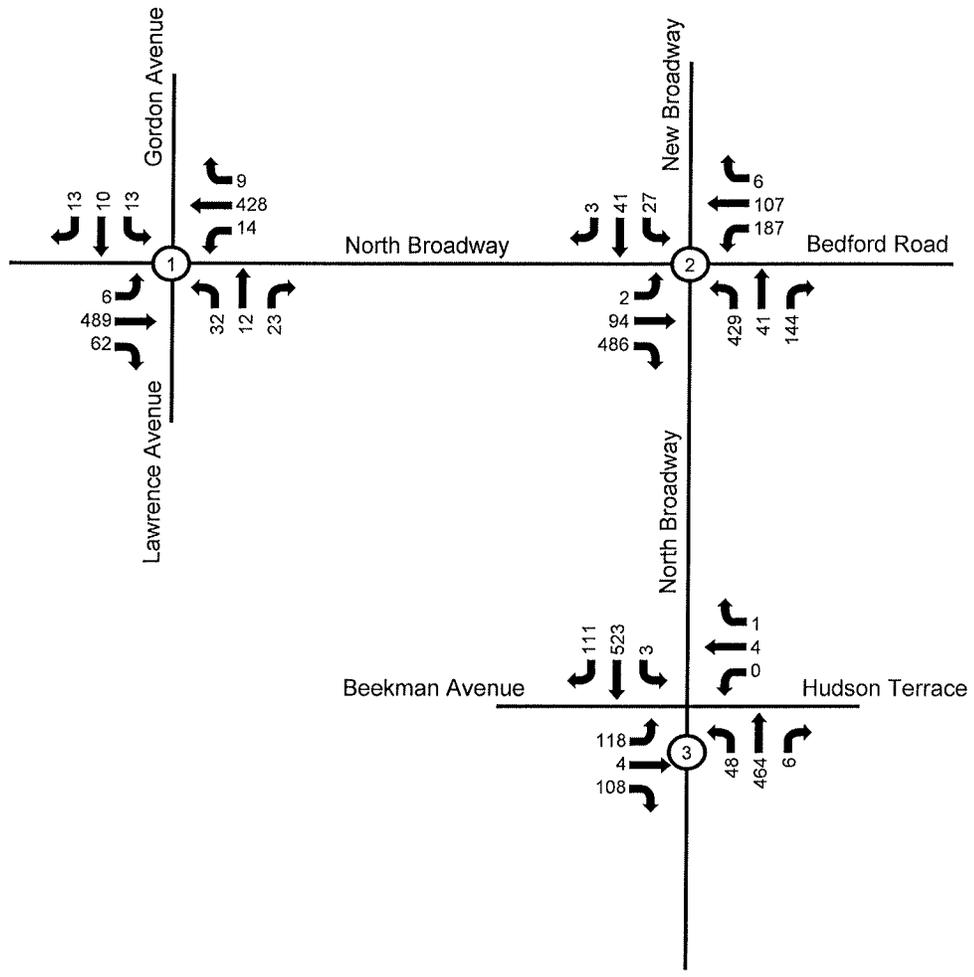
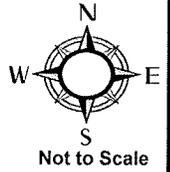
Pedestrian counts were conducted by representatives of **Adler Consulting** concurrent with the vehicle data collection at the same intersections.

E. PEAK HOUR

A review of the surveyed traffic data revealed the peak hour of traffic activity on the roadway system in the vicinity of the Site on a Saturday to be between 12:00 p.m. and 1:00 p.m.

F. EXISTING TRAFFIC AND PEDESTRIAN VOLUMES

The traffic volumes currently on the adjacent roadway network during the Saturday Peak Hour are depicted on Figure 2. The Saturday traffic volume count data were reviewed to verify their validity.



Legend
SAT. Peak Hour Volume

Project:
Open Door
Sleepy Hollow, NY

Prepared By:
Adler Consulting, White Plains, NY
Transportation Planning & Traffic Engineering, PLLC

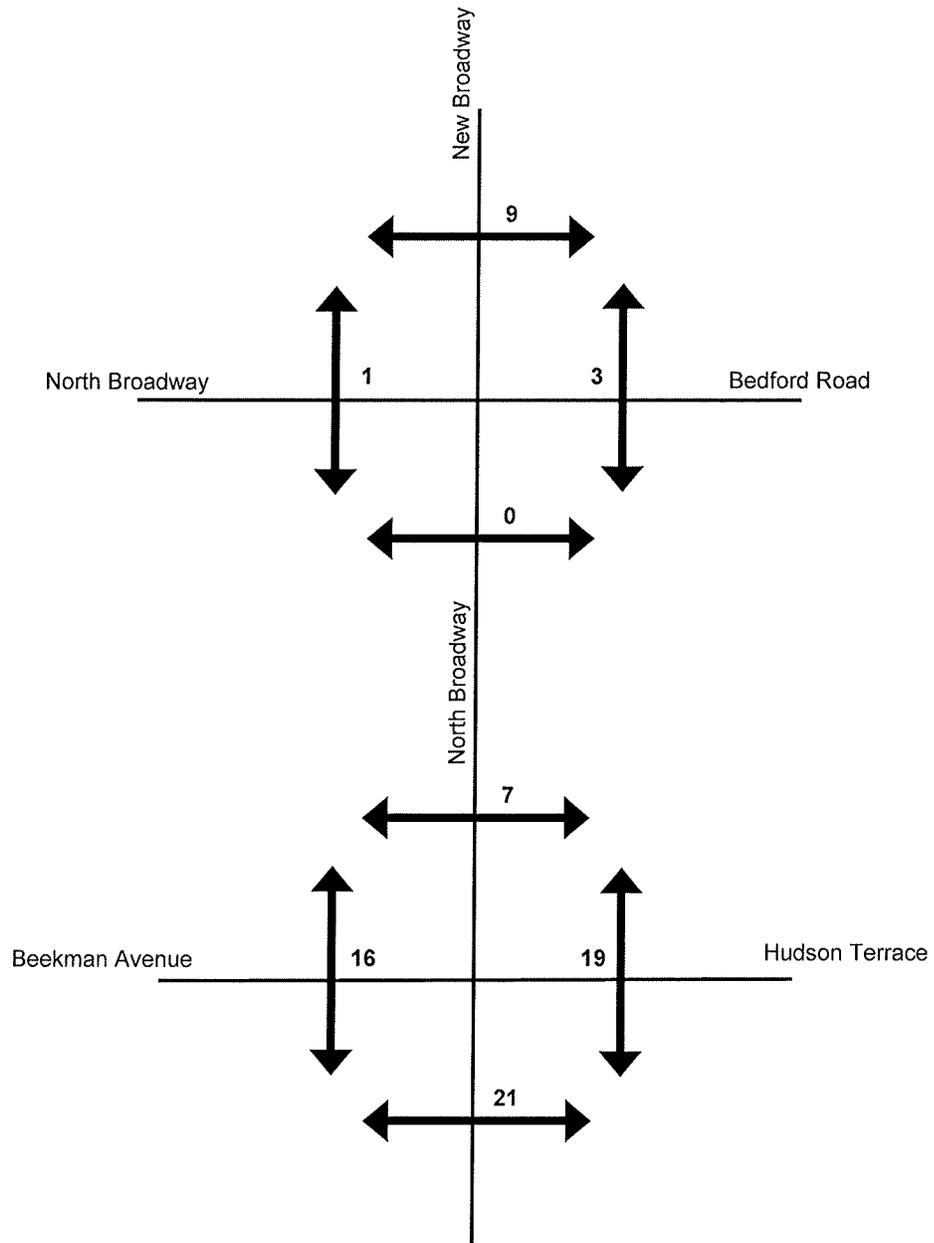
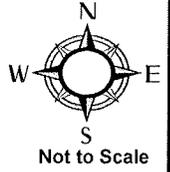
Title:
Saturday Peak Highway Hour
Traffic Volumes
(September 2012)

FIGURE 2

The pedestrian volumes were also reviewed with regard to their validity and are depicted on Figure 3. As shown in Figure 3, during the Saturday Peak Hour (12:00 p.m. to 1:00 p.m.), 16 pedestrians were observed crossing the west leg of the intersection of North Broadway with Beekman Avenue/Hudson Terrace, 21 pedestrians crossed the south leg, 19 pedestrians crossed the east leg, and seven (7) pedestrians crossed the north leg of the intersection. At the intersection of North Broadway with Bedford Road, three (3) pedestrians were observed crossing at the Bedford Road crosswalk. The pedestrian counts also revealed that nine (9) pedestrians used the New Broadway crosswalk at the North Broadway with New Broadway intersection, while only one (1) pedestrian was observed using the North Broadway crosswalk. These pedestrian volumes are lower than those observed during the weekday AM and PM Peak Highway Hours.

G. CAPACITY ANALYSES PROCEDURES

Traffic impacts are measured by intersection capacity analyses, computed in accordance with procedures outlined in the 2000 Highway Capacity Manual, published by the Transportation Research Board. In general, the analyses' results are



Legend
AM. Peak Hour Volume

Project:
Open Door
Sleepy Hollow, NY

Title:
Saturday Peak Highway Hour
Pedestrian Volumes
(September 2012)

Prepared By:
Adler Consulting, White Plains, NY
Transportation Planning & Traffic Engineering, PLLC

FIGURE 3

a measure of the ability of an intersection to process vehicles. This is evaluated for each approach to the intersection as well as for the entire intersection. The analyses' results are identified as Levels-of-Service (LOS) which range from "A" through "F", with LOS "A" representing the least delays and LOS "F" representing longer delays or capacity deficient operations.

According to generally accepted practice, Levels-of-Service "A", "B" and "C" reflect clearly acceptable conditions, Level-of-Service "D" reflects the existence of delays within a generally tolerable range, Level-of-Service "E" is generally tolerated on minor movements and Level-of-Service "F" indicates typically undesirable delays often associated with breakdown conditions.

The parameters considered in the calculations include: the type of intersection control, the volumes on each approach, the distribution of vehicles by direction (left, through and right) and other factors including vehicle types, pedestrian movements and parking constraints. Roadway parameters relate to the geometry of the intersection, specifically, the number of lanes and lane-use considerations.

The computed Level-of-Service is defined in terms of the average control delay per vehicle for the peak 15-minute period within the peak one-hour period.

Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. For signalized intersections, capital letters are used to indicate the Levels-of-Service. The range of delay within each Level-of-Service category are:

LEVEL-OF-SERVICE	STOPPED DELAY PER VEHICLE (Seconds)
A	Less than 10.00
B	Between 10.01 and 20.00
C	Between 20.01 and 35.00
D	Between 35.01 and 55.00
E	Between 55.01 and 80.00
F	Greater than 80.00

For unsignalized intersections, Levels-of-Service and delay are reported for the individual lane groups, in that they provide a more meaningful representation of operating conditions than the overall intersection Level-of-Service and delay. Lower case letters are used to show that the Level-of-Service refers to unsignalized intersections. The ranges of delay within each Level-of-Service category are as follows:

LEVEL-OF-SERVICE	STOPPED DELAY PER VEHICLE (Seconds)
a	Less than 10.00
b	Between 10.01 and 15.00
c	Between 15.01 and 25.00
d	Between 25.01 and 35.00
e	Between 35.01 and 50.00
f	Greater than 50.00

These delay ranges for the Unsignalized Level-of-Service categories are less than those at signalized intersections because it is assumed that motorists will tolerate longer delays at a signalized intersection in exchange for guaranteed entry into the intersection in a definite period of time.

H. EXISTING TRAFFIC OPERATING CONDITIONS

The Existing traffic volumes on a typical Saturday were compared with current roadway capacities using the Synchro, Version 7 analyses software (the same version used to evaluate existing traffic operating conditions during the weekday AM and PM Peak Highway Hours). The Existing analysis results for the Saturday Peak Highway Hour are summarized in Table 1. Detailed capacity analysis worksheets are included in the Appendix of this report.

As can be seen in Table 1, overall Level-of-Service (LOS) “C” operating conditions are currently provided at the signalized intersections of North Broadway with New Broadway/Bedford Road and North Broadway with Beekman Avenue/Hudson Terrace. At the unsignalized intersection of North Broadway with Lawrence Avenue/Gordon Avenue, LOS “a” operating conditions are provided for the North Broadway approaches, while LOS “c” operating conditions are provided for the westbound Gordon Avenue approach and LOS “d” conditions for the eastbound Lawrence Avenue approach.

The Saturday Existing analysis results were then compared with those from previously performed capacity analysis for the weekday AM and PM Peak Highway Hours under the Existing Conditions scenario. It was found that the two signalized intersections (North Broadway with New Broadway/Bedford Road and North Broadway with Beekman Avenue/Hudson Terrace) operate during the Saturday Peak Highway Hour at the same LOS C as occurs during the weekday AM and PM Peak Highway Hours.

Table 1. Level-of-Service Summary, Existing Conditions

Intersection	Approach ¹	SATURDAY	
		LOS ²	Average Delay ³ (Sec./Veh.)
North Broadway at Lawrence Ave./Gordon Ave.	EB l/t/r	d	33.4
	WB l/t/r	c	20.9
	NB l/t/r	a	0.5
	SB l/t/r	a	0.3
North Broadway at New Broadway/Bedford Road	WB l	E	69.2
	WB r	E	59.7
	NB t/r	A	3.9
	SB l/t	D	41.7
	SE l/t/r	E	71.9
	Overall	C	32.8
North Broadway at Beekman Ave./Hudson Ter.	EB l/t	E	65.1
	EB r	B	19.2
	WB l/t/r	D	54.8
	NB l/t/r	D	38.9
	SB l/t	A	2.6
Overall	C	23.1	

- Note:
1. EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound, l = Left, t = Thru and r = Right.
 2. Uppercase letters represent Levels-of-Service for signalized intersections, while lowercase letters represent those of unsignalized intersections.
 3. Delays are the average for each lane group in seconds per vehicle. For signalized intersections, the average delay per vehicle for the entire intersection is also included. For unsignalized intersections, the value represents the average delay per vehicle for the lane group experiencing the greatest delays.

A comparison of the Saturday Existing analysis results for the intersection of North Broadway with Lawrence Avenue/Gordon Avenue with those for the weekday AM and PM Peak Highway Hours revealed that the eastbound Lawrence Avenue approach operates better during the Saturday Peak Highway Hour than during the weekday AM and PM Peak Highway Hours. The comparative analysis also showed

no change in operations of the westbound Gordon Avenue approach and the North Broadway approaches (the Gordon Avenue approach operating at LOS “c” during all three peak hours and, likewise, the North Broadway approaches at LOS “a”).

I. VICINITY DEVELOPMENTS

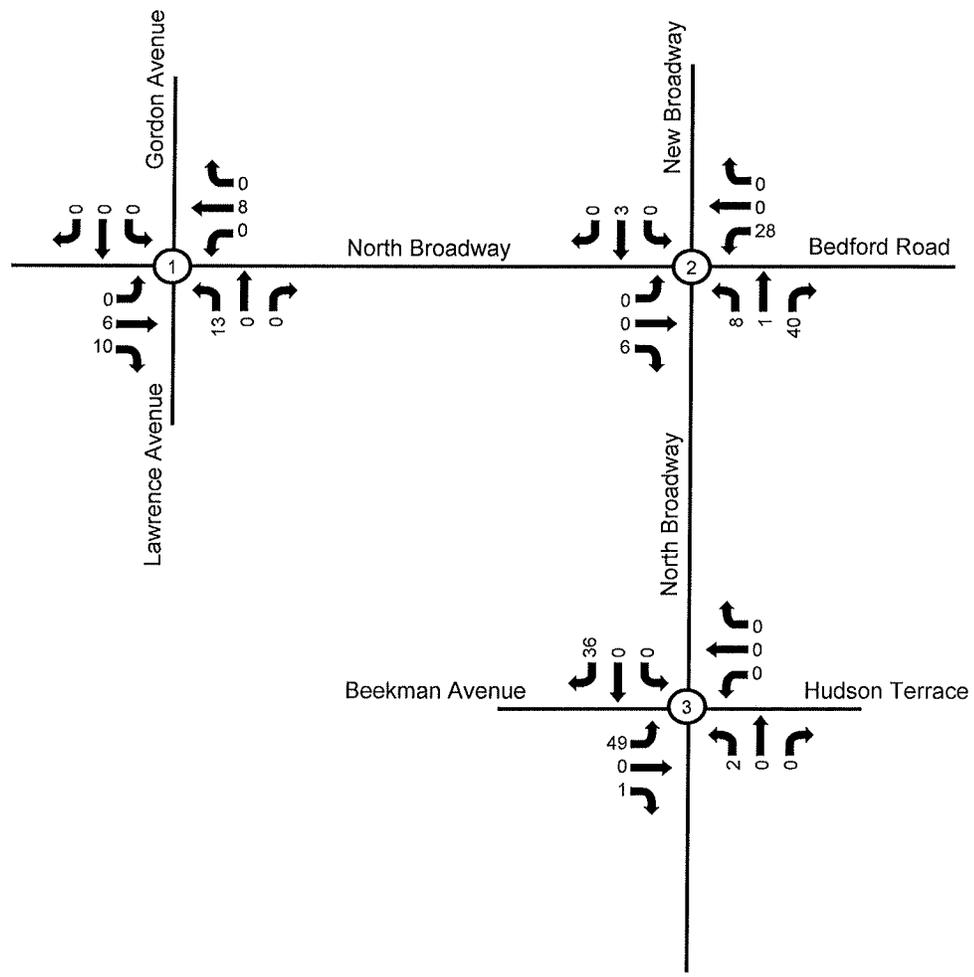
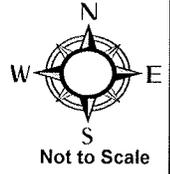
At the time the field work for this application was initially performed, Adler Consulting conferred with the planning consultants for the Village of Sleepy Hollow to identify vicinity developments. The planning consultants confirmed that there are two potential developments in the vicinity of the Site that are expected to generate traffic through the Study area. These developments include the Rivers Edge (a 60-unit residential project) and the Lighthouse Landing development on the former GM site.

Traffic volumes anticipated to be generated by these developments were initially determined for the Peak Weekday AM and PM Highway Hours from information contained in the Institute of Transportation Engineers (ITE) publication, *Trip Generation*, 8th Edition, or from available traffic studies, and were then added to the

surrounding roadway network. To present a conservative approach, the number of trips anticipated to be generated by the vicinity developments during the Peak Saturday Highway Hour was assumed to be the same as those generated during the Peak Weekday AM Highway Hour. Hence, the vicinity development traffic was assigned onto the adjacent roadway network as shown in Figure 4.

J. NO-BUILD TRAFFIC VOLUMES

The “No-Build” traffic volumes are the resultant sum of the Horizon Year traffic volumes and the vicinity development volumes. The Horizon Year traffic volumes are determined by multiplying the Existing traffic volumes by a factor representative of area-wide growth. Based on the increase in the traffic volume, it is expected that additional area-wide background traffic growth will not be significant by the Project’s year of completion (2013). In this application, a one-half of one percent per year growth factor was used to represent the non-development-specific increase in traffic volumes on the road system in the area. The vicinity development volumes were then added to the Horizon Year traffic volumes to arrive at the No-Build traffic volumes for a typical Saturday and are shown graphically in Figure 5. These traffic



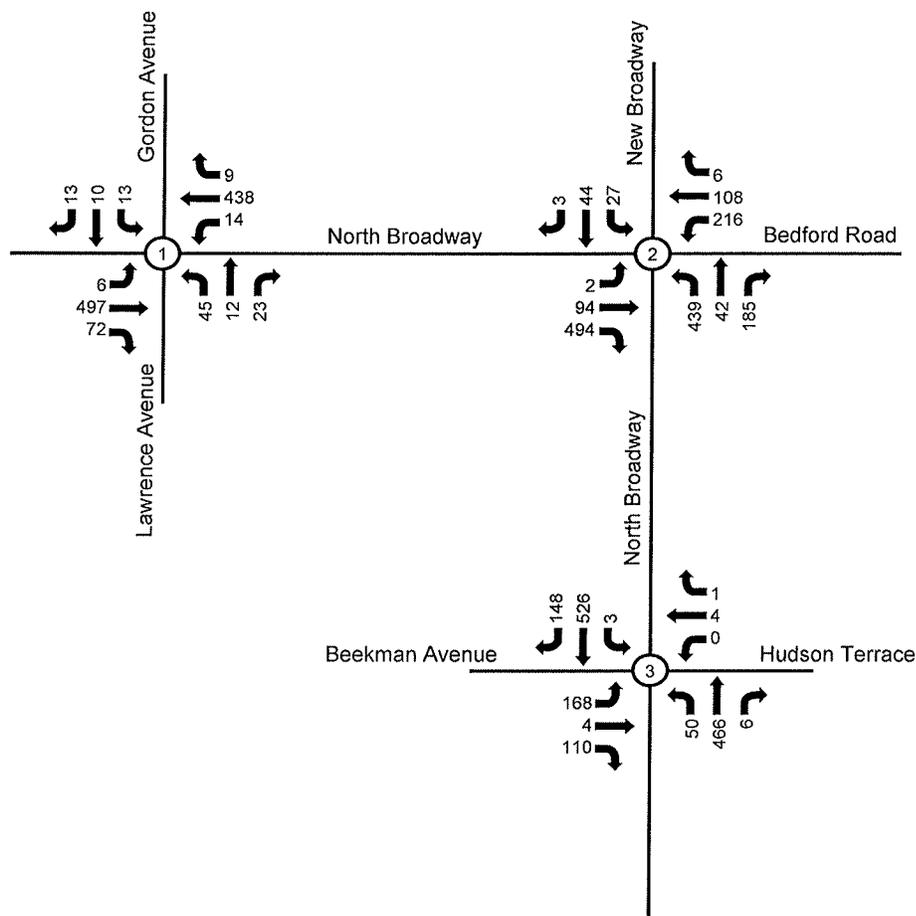
Legend
SAT. Peak Hour Volume

Project:
Open Door
Sleepy Hollow, NY

Prepared By:
Adler Consulting, White Plains, NY
Transportation Planning & Traffic Engineering, PLLC

Title:
Saturday Peak Highway Hour
Traffic Volumes
Vicinity Developments

FIGURE 4



Legend
SAT. Peak Hour Volume

Project:
Open Door
Sleepy Hollow, NY

Title:
Saturday Peak Highway Hour
No-Build Traffic Volumes

Prepared By:
Adler Consulting, White Plains, NY
Transportation Planning & Traffic Engineering, PLLC

FIGURE 5

volumes represent the number of vehicles projected to be on the adjacent roadway system during the Peak Saturday Highway Hour without the Project.

K. NO-BUILD CAPACITY ANALYSIS RESULTS

The No-Build traffic volumes on a typical Saturday were compared with current roadway capacities using the Synchro, Version 7 analyses software (the same version used to evaluate no-build traffic operating conditions during the weekday AM and PM Peak Highway Hours). The No-Build analysis results for the Saturday Peak Highway Hour are summarized in Table 2. Detailed capacity analysis worksheets are included in the Appendix of this report.

Table 2. Level-of-Service Summary, No-Build Conditions

Intersection	Approach ¹	SATURDAY	
		LOS ²	Average Delay ³ (Sec./Veh.)
North Broadway at Lawrence Ave./Gordon Ave.	EB l/t/r	e	42.0
	WB l/t/r	c	21.4
	NB l/t/r	a	0.5
	SB l/t/r	a	0.3
North Broadway at New Broadway/Bedford Road	WB l	E	75.8
	WB r	E	59.7
	NB t/r	A	5.3
	SB l/t	D	50.9
	SE l/t/r	E	73.8
	Overall	D	37.5
North Broadway at Beekman Ave./Hudson Ter.	EB l/t	E	72.2
	EB r	C	30.5
	WB l/t/r	D	54.8
	NB l/t/r	D	42.7
	SB l/t	A	3.4
	Overall	C	27.3

- Note:
1. EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound, l = Left, t = Thru and r = Right.
 2. Uppercase letters represent Levels-of-Service for signalized intersections, while lowercase letters represent those of unsignalized intersections.
 3. Delays are the average for each lane group in seconds per vehicle. For signalized intersections, the average delay per vehicle for the entire intersection is also included. For unsignalized intersections, the value represents the average delay per vehicle for the lane group experiencing the greatest delays.

As can be seen in Table 2, on a typical Saturday, it is anticipated that the overall Level-of-Service at the signalized intersection of North Broadway with New Broadway/Bedford Road would transition to LOS “D”. In addition, the signalized intersection of North Broadway with Beekman Avenue/Hudson Terrace is expected to continue operating at LOS “C.” Lastly, at the unsignalized intersection of North

Broadway with Lawrence Avenue/Gordon Avenue, LOS “a” operating conditions are projected on North Broadway, along with LOS “c” for the westbound Gordon Avenue approach and LOS “e” conditions on the Lawrence Avenue approach.

The Saturday No-Build analysis results were then compared with those from previously performed capacity analysis for the weekday AM and PM Peak Highway Hours under the No-Build Conditions scenario. It was found that the intersection of North Broadway with New Broadway/Bedford Road operates during the Saturday Peak Highway Hour at the same LOS D as the weekday AM and PM Peak Highway Hours. Similarly, the results revealed that the intersection of North Broadway with Beekman Avenue/Hudson Terrace operates during the Saturday Peak Highway Hour at LOS C (the same as during the weekday AM and PM Peak Highway Hours).

A comparison of the Saturday No-Build analysis results for the intersection of North Broadway with Lawrence Avenue/Gordon Avenue with those for the weekday AM and PM Peak Highway Hours revealed that the eastbound Lawrence Avenue approach operates better during the Saturday Peak Highway Hour (LOS “e” with 42.0 seconds of delay) than during the weekday AM and PM Peak Highway Hours (LOS “f” with 67.8 seconds and 111.6 seconds of delay, weekday AM and PM,

respectively). The comparative analysis also showed no change in operations of the westbound Gordon Avenue approach and the North Broadway approaches (the Gordon Avenue approach operating at LOS “c” during all three peak hours and, likewise, the North Broadway approaches at LOS “a”).

L. PROPOSED PROJECT TRAFFIC

Previous surveys indicated that 70 percent of the patients and visitors walk to the Family Medical Center, 27 percent drive, approximately two (2) percent use public transportation, and approximately one (1) percent either use taxi or are dropped off. The survey data also indicate that 78 percent of the staff drive their own automobiles to work, 15 percent travel by bus, and seven (7) percent walk.

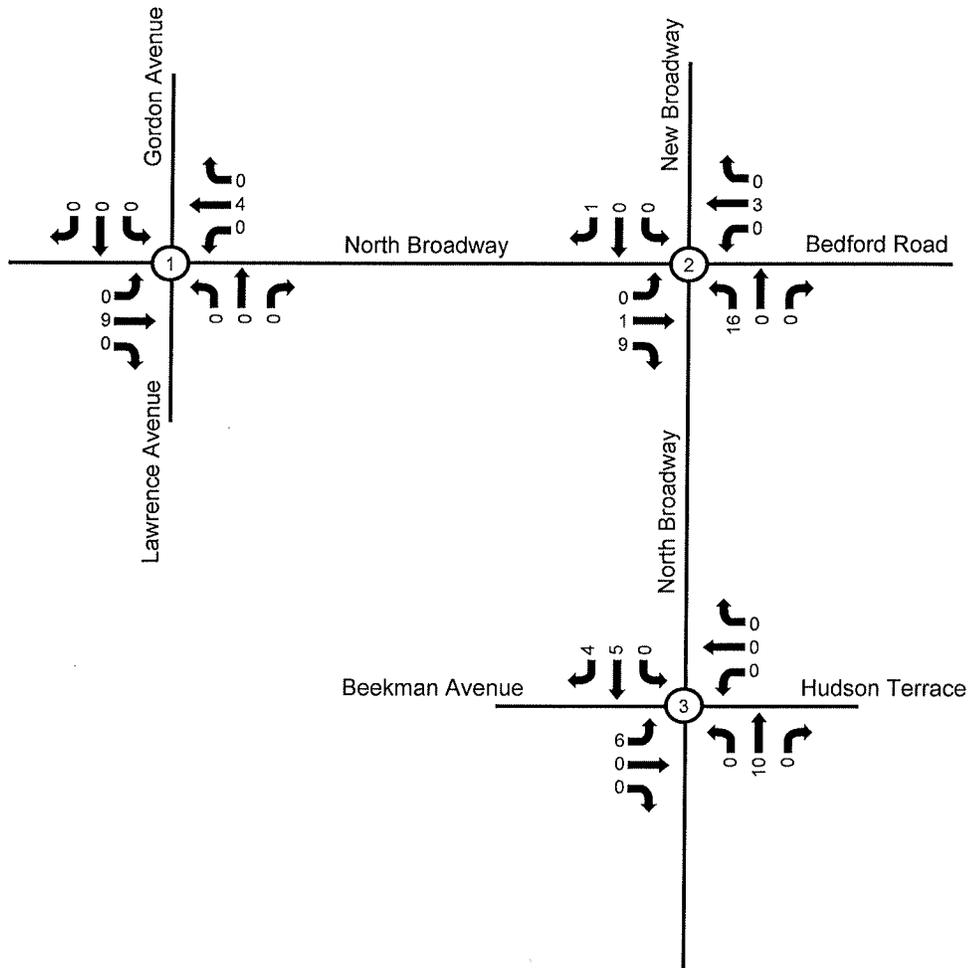
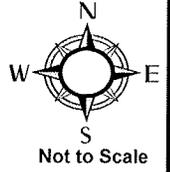
It was previously calculated that the proposed Family Medical Center would generate a total of 39 trips (27 entering and twelve [12] exiting trips) during the AM Peak Highway Hour and a total of 27 trips (twelve [12] entering and 15 exiting trips) during the PM Peak Highway Hour.

It was also anticipated that a proposed shuttle bus service would transport Family Medical Center staff from the Phelps Memorial Hospital Garage to the Site daily and would add an additional two (2) entering and two (2) exiting trips to the roadways during the Peak Highway Hours.

Even though all staff will park in the Phelps Garage and will be transported to the North Broadway facility by a shuttle bus, to be conservative, the total number of trips anticipated to be generated by the new Family Medical Center during the Peak Saturday Highway Hour was assumed to be the same as that generated during the Peak Weekday AM Highway Hour. Therefore, it is calculated that the proposed Open Door Family Medical Center would generate a total of 43 trips (29 entering and 14 exiting trips) during the Saturday Peak Highway Hour. The project-generated vehicle trips are summarized in Table 3. Figure 6 depicts the project-generated traffic.

Table 3. Project-Generated Peak Hour Vehicular Trip Summary

Open Door	SATURDAY		
	In	Out	Total
Future	27	12	39
Additional Trips (Shuttle Bus)	2	2	4
Total Projected	29	14	43



Legend
SAT. Peak Hour Volume

Project:
Open Door
Sleepy Hollow, NY

Title:
Saturday Peak Highway
Hour Site-Generated
Traffic Volumes

Prepared By:
Adler Consulting, White Plains, NY
Transportation Planning & Traffic Engineering, PLLC

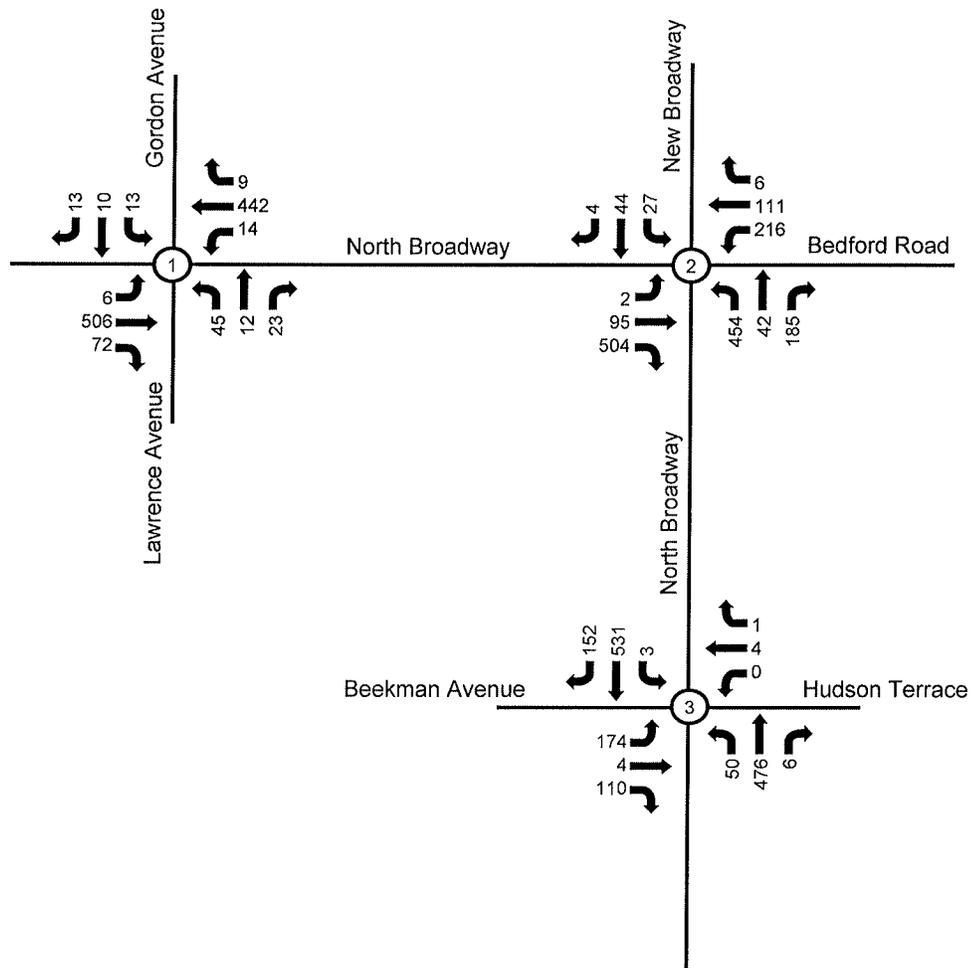
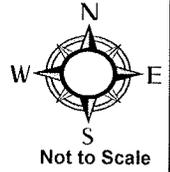
FIGURE 6

The project-generated trips were added to the No-Build traffic volumes to obtain the Saturday Build traffic volumes. The resultant Build traffic volumes are shown in Figure 7, which represent the future projected traffic volumes during the Saturday Peak Highway Hour upon completion of the Project.

M. FUTURE TRAFFIC OPERATING CONDITIONS

The anticipated Saturday Build traffic volumes were compared with current roadway capacities using the Synchro, Version 7 analyses software (the same version used to evaluate build traffic operating conditions during the weekday AM and PM Peak Highway Hours). Table 4 summarizes the Saturday analysis results for the Build condition. For comparison purposes, the Saturday analysis results for the Existing and No-Build conditions are also represented in Table 4. Detailed capacity analysis worksheets are included in the Appendix of this report.

Level-of-Service “D” operating conditions continue to be projected at the signalized intersection of North Broadway with New Broadway/Bedford Road with an increase in overall delay of 1.4 seconds. In addition, the signalized intersection of North



Legend
SAT. Peak Hour Volume

Project:
Open Door
Sleepy Hollow, NY

Title:
Saturday Peak Highway Hour
Build Traffic Volumes

Prepared By:
Adler Consulting, White Plains, NY
Transportation Planning & Traffic Engineering, PLLC

FIGURE 7

Broadway with Beekman Avenue/Hudson Terrace is expected to continue operating at overall LOS “C” during the Saturday Peak Highway Hour with an increase in overall delay of 0.8 seconds. Lastly, at the unsignalized intersection of North Broadway with Lawrence Avenue/Gordon Avenue, LOS “a” operating conditions are anticipated on the northbound and southbound North Broadway approaches, along with LOS “c” for the westbound Gordon Avenue approach and LOS “e” for the eastbound Lawrence Avenue approach.

The Saturday Build analysis results were compared with those from previously performed capacity analysis for the weekday AM and PM Peak Highway Hours under the Build Conditions scenario. It was found that the intersection of North Broadway with New Broadway/Bedford Road operates during the Saturday Peak Highway Hour at the same LOS D as occurs during the weekday AM and PM Peak Highway Hours. Similarly, the results revealed that the intersection of North Broadway with Beekman Avenue/Hudson Terrace operates during the Saturday Peak Highway Hour at LOS C (the same as occurs during the weekday AM and PM Peak Highway Hours).

Table 4. Level-of-Service Comparison

Intersection	Approach ¹	SATURDAY		
		Existing	No-Build	Build
North Broadway at Lawrence Ave./Gordon Ave.	EB l/t/r	d (33.4)	e (42.0)	e (43.6)
	WB l/t/r	c (20.9)	c (21.4)	c (21.7)
	NB l/t/r	a (0.5)	a (0.5)	a (0.5)
	SB l/t/r	a (0.3)	a (0.3)	a (0.3)
North Broadway at New Broadway/Bedford Road	WB l	E (69.2)	E (75.8)	E (76.1)
	WB r	E (59.7)	E (59.7)	E (60.3)
	NB t/r	A (3.9)	A (5.3)	A (5.6)
	SB l/t	D (41.7)	D (50.9)	D (54.7)
	SE l/t/r	E (71.9)	E (73.8)	E (74.0)
	Overall	C (32.8)	D (37.5)	D (38.9)
North Broadway at Beekman Ave./Hudson Ter.	EB l/t	E (65.1)	E (72.2)	E (73.3)
	EB r	B (19.2)	C (30.5)	C (31.4)
	WB l/t/r	D (54.8)	D (54.8)	D (54.8)
	NB l/t/r	D (38.9)	D (42.7)	D (43.8)
	SB l/t	A (2.6)	A (3.4)	A (3.6)
	Overall	C (23.1)	C (27.3)	C (28.1)

- Note:
1. EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound, l = Left, t = Thru, and r = Right
 2. Uppercase letters represent Levels-of-Service for signalized intersection, while lowercase letters represent those of unsignalized intersections.
 3. Delays are the average for each lane group in seconds per vehicle. For signalized intersections, the average delay per vehicle for the entire intersection is also included. For unsignalized intersections, the value represents the average delay per vehicle for the lane group experiencing the greatest delays.

A comparison of the Saturday Build analysis results for the intersection of North Broadway with Lawrence Avenue/Gordon Avenue with those for the weekday AM and PM Peak Highway Hours revealed that the eastbound Lawrence Avenue approach operates better during the Saturday Peak Highway Hour (LOS “e” with 43.6 seconds of delay) than during the weekday AM and PM Peak Highway Hours (LOS “f” with 70.0 seconds and 119.0 seconds of delay, weekday AM and PM,

respectively). The comparative analysis also showed no change in operations of the westbound Gordon Avenue approach and the North Broadway approaches (the Gordon Avenue approach operating at LOS “c” during all three peak hours and, likewise, the North Broadway approaches at LOS “a”).

N. PARKING DATA COLLECTION

As during the remainder of the week, on Saturdays, staff will park at the Phelps Memorial Hospital Garage and would then use the shuttle buses to the Family Medical Center.

To determine whether sufficient on-street parking would be available for patients when on-Site parking is not sufficient, on-street parking data were collected on a typical Saturday within approximately one-quarter mile of the Open Door Family Medical Center.

1. ON-STREET PARKING DATA COLLECTION FOR PATIENTS/VISITORS

To determine the number of available on-street parking spaces on a Saturday, **Adler Consulting** reconnoitered within approximately one-quarter mile of the proposed Site including sections of New Broadway, Pine Close, Hudson Terrace, Beekman Avenue, Lawrence Avenue, North Washington Street and the municipal parking lot located on Beekman Avenue west of North Broadway.

On-street parking data were collected every half hour on Saturday, September 15, 2012, between 8:00 a.m. and 4:00 p.m. The on-street parking supply and demand is summarized in Table 5.

The parking inventory indicated that there are a total of 228 parking spaces including 56 metered spaces and seven (7) handicapped spaces available within approximately one-quarter mile of the Site.

On Lawrence Avenue there are 34 parking spaces of which 21 spaces are located on the east side and 13 spaces are located on the west side. On New Broadway, there are a total of 44 parking spaces distributed equally on both

the sides of the roadway. On Pine Close, there are nine (9) parking spaces located on the north side of the street. Even though parking is not permitted, parked vehicles were observed on the south side of Pine Close. These vehicles are included in the parking demand calculations, but the parking spaces were not included in the inventory of on-street spaces.

Table 5. On-Street Parking Supply and Demand (Saturday, September 15, 2012)

Time	Lawrence Avenue		New Broadway		Pine Close		Pine Street	Hudson Terrace				Beekman Avenue		Washington Street		Municipal Lot			Official	Total 228 spaces	Available	
	E	W	E	W	N	S	E	E	W	N	S	N	S	E	W	R	H	C				
# of Spaces	21	13	22	22	9	0	9	0	16	0	10			12	7	24				165		
Metered												24	24	4	4					56		
HC spaces		1										1	1	1				3		7		
Permit																	22		9	31		
8:00	8:30	19	16	17	14	7	1	13	0	15	0	8	10	14	11	7	8	2	0	9	160	68
8:30	9:00	18	15	16	12	6	1	13	0	13	0	7	5	14	11	6	8	2	0	9	145	83
9:00	9:30	15	16	14	9	6	1	12	0	12	0	6	3	12	10	9	12	2	1	9	138	90
9:30	10:00	17	13	14	9	8	1	11	0	14	0	5	2	14	8	6	8	2	0	9	130	98
10:00	10:30	15	13	14	10	8	1	11	0	11	0	5	4	15	7	5	7	2	0	9	126	102
10:30	11:00	14	14	12	9	10	1	11	0	13	0	5	6	19	6	5	7	2	1	9	133	95
11:00	11:30	16	14	13	10	9	1	11	0	13	0	6	5	13	5	5	9	2	0	8	130	98
11:30	12:00	20	15	12	10	9	1	10	0	14	0	6	9	18	10	6	7	2	0	8	147	81
12:00	12:30	15	13	12	10	9	1	10	0	16	0	6	6	15	10	7	10	3	0	8	140	88
12:30	1:00	17	14	14	11	9	1	9	0	16	0	6	6	17	10	7	10	3	1	8	148	80
1:00	1:30	16	12	14	12	8	1	10	0	16	0	5	6	12	10	7	9	3	0	8	138	90
1:30	2:00	14	12	13	13	10	1	9	0	16	0	5	9	8	10	10	6	3	0	8	136	92
2:00	2:30	15	12	12	17	7	1	9	0	14	0	5	9	11	11	8	5	3	0	8	136	92
2:30	3:00	17	12	12	17	9	1	10	0	14	0	6	12	8	11	8	6	3	0	8	143	85
3:00	3:30	18	13	13	13	9	1	10	0	15	0	5	10	6	12	11	5	3	0	8	141	87
3:30	4:00	18	14	13	15	8	1	10	0	11	0	6	7	10	12	11	6	3	0	8	142	86

On Pine Street, there are a total of nine (9) parking spaces on the east side. For the section of Hudson Terrace east of and parallel to North Broadway, there are a total of 16 parking spaces located on the west side. Parking is not permitted along the east side of Hudson Terrace on Saturdays. For the section of Hudson Terrace that intersects and is perpendicular to North Broadway, ten (10) spaces are located on the south side. Parking is not permitted along the north side of Hudson Terrace on Saturdays. There are, therefore, 14 fewer parking spaces on Hudson Terrace available for potential Saturday parkers than for potential weekday parkers. These 14 parking spaces are not included in the calculations of available parking supply for Saturday.

On Beekman Avenue, there are a total of 50 metered parking spaces including two (2) metered spaces designated for the use of handicapped drivers distributed equally on both sides of the roadway. On Washington Street, there are a total of 28 parking spaces (19 regular spaces, eight [8] metered spaces, and one [1] reserved for use by handicapped drivers). The municipal parking lot has a total of 58 parking spaces of which 22 parking spaces are provided for permit holders and nine (9) spaces are reserved for Municipal use.

These 31 reserved parking spaces are not available for Saturday Family Medical Center patients or visitors and are not included in the calculations.

As shown in the Table 5, 130 vehicles were observed to be parked in the study area between 9:30 a.m. and 10:00 a.m. With 228 parking spaces within the area of the relocated Family Medical Center, there are at least 98 additional parking spaces available for use during this period. The data also indicate that during the Peak Saturday Highway Hour (12:00 p.m. to 1:00 p.m.), a minimum of 80 parking spaces would be available. When the on-street parking demand was at its highest (1:30 p.m. to 2:00 p.m.), there were at least 62 parking spaces available.

In analyzing the anticipated parking conditions for Saturday, no credit was taken for the on-Site parking spaces, nor for providing shuttle service from Phelps Memorial Hospital Garage for the staff resulting in a very conservative approach. There would be at least 62 parking spaces available on Saturdays for use by the patients and staff of the Open Door Family Medical Center when on-street parking demand is at its highest. Therefore, it is considered opinion of **Adler Consulting** that there is sufficient on-street parking available

on Saturday to accommodate the anticipated parking needs of the Open Door Family Medical Center.

2. COMPARISON WITH PREVIOUS WEEKDAY PARKING DATA

The Saturday parking data were then compared with the parking data previously collected on Tuesday, February 28, 2012 for a weekday. As previously noted, during the Peak Saturday Highway Hour (12:00 p.m. to 1:00 p.m.), a minimum of 80 on-street parking spaces would be available. In comparison, the earlier weekday parking study indicated that there were an average of 103 parking spaces available for potential patients or visitors between 8:00 a.m. and noon. The earlier weekday data also indicated that there are an average of 98 on-street parking spaces available during the noon to 4:00 p.m. period.

The comparative analysis of the two sets of parking data supports that there will be adequate on-street parking available on weekdays as well as on Saturdays for patients visiting the proposed Open Door Family Medical Center when on-Site parking is not sufficient to meet patient demands.

O. CONCLUSIONS

Based on the findings contained herein, it is the considered professional opinion of **Adler Consulting** that the operation of the proposed Open Door Family Medical Center in the Village of Sleepy Hollow will not have a significant impact on the area-wide traffic operating conditions on a typical Saturday.

Further, an analysis of the on-street parking on a Saturday supports that there would be sufficient parking in their off-street lot supplemented by the local streets to accommodate the anticipated needs of the Open Door facility for patients.

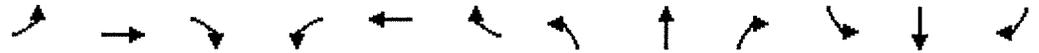
Therefore, it is the considered professional opinion of **Adler Consulting** that adequate parking is available on Saturday to accommodate the anticipated needs of the Open Door Family Medical Center.

CAPACITY ANALYSES

Existing SAT

1: Lawrence Avenue & North Broadway

Project # 111229



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	32	12	23	13	10	13	14	428	9	6	489	62
Sign Control		Stop			Stop			Free			Free	
Grade		-5%			-2%			-4%			3%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	36	13	26	15	11	15	16	481	10	7	549	70
Pedestrians		5			2						6	
Lane Width (ft)		8.0			12.0						10.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)								678				
pX, platoon unblocked	0.91	0.91		0.91	0.91	0.91				0.91		
vC, conflicting volume	1146	1127	315	840	1157	494	624			493		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1113	1092	315	778	1125	400	624			399		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	73	93	96	94	94	97	98			99		
cM capacity (veh/h)	135	190	680	233	181	545	950			1056		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2							
Volume Total	75	40	507	281	344							
Volume Left	36	15	16	7	0							
Volume Right	26	15	10	0	70							
cSH	200	267	950	1056	1700							
Volume to Capacity	0.38	0.15	0.02	0.01	0.20							
Queue Length 95th (ft)	41	13	1	0	0							
Control Delay (s)	33.4	20.9	0.5	0.3	0.0							
Lane LOS	D	C	A	A								
Approach Delay (s)	33.4	20.9	0.5	0.1								
Approach LOS	D	C										
Intersection Summary												
Average Delay			2.9									
Intersection Capacity Utilization			46.7%		ICU Level of Service		A					
Analysis Period (min)			15									

No-Build SAT

1: Lawrence Avenue & North Broadway

Project # 111229



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	45	12	23	13	10	13	14	438	9	6	497	72
Sign Control		Stop			Stop			Free			Free	
Grade		-5%			-2%			-4%			3%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	51	13	26	15	11	15	16	492	10	7	558	81
Pedestrians		5			2						6	
Lane Width (ft)		8.0			12.0						10.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)								678				
pX, platoon unblocked												
vC, conflicting volume	1172	1153	325	856	1188	505	644			504		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1172	1153	325	856	1188	505	644			504		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	62	93	96	93	94	97	98			99		
cM capacity (veh/h)	133	191	669	224	182	509	934			1055		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2							
Volume Total	90	40	518	286	360							
Volume Left	51	15	16	7	0							
Volume Right	26	15	10	0	81							
cSH	184	260	934	1055	1700							
Volume to Capacity	0.49	0.16	0.02	0.01	0.21							
Queue Length 95th (ft)	60	14	1	0	0							
Control Delay (s)	42.0	21.4	0.5	0.3	0.0							
Lane LOS	E	C	A	A								
Approach Delay (s)	42.0	21.4	0.5	0.1								
Approach LOS	E	C										
Intersection Summary												
Average Delay				3.8								
Intersection Capacity Utilization			48.8%		ICU Level of Service				A			
Analysis Period (min)			15									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕↔	
Volume (veh/h)	45	12	23	13	10	13	14	442	9	6	506	72
Sign Control		Stop			Stop			Free			Free	
Grade		-5%			-2%			-4%			3%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	51	13	26	15	11	15	16	497	10	7	569	81
Pedestrians		5			2						6	
Lane Width (ft)		8.0			12.0						10.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)								678				
pX, platoon unblocked												
vC, conflicting volume	1187	1168	330	865	1203	510	654			509		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1187	1168	330	865	1203	510	654			509		
IC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
IC, 2 stage (s)												
IF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	61	93	96	93	94	97	98			99		
cM capacity (veh/h)	130	187	664	220	178	506	926			1051		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2							
Volume Total	90	40	522	291	365							
Volume Left	51	15	16	7	0							
Volume Right	26	15	10	0	81							
cSH	180	255	926	1051	1700							
Volume to Capacity	0.50	0.16	0.02	0.01	0.21							
Queue Length 95th (ft)	62	14	1	0	0							
Control Delay (s)	43.6	21.7	0.5	0.3	0.0							
Lane LOS	E	C	A	A								
Approach Delay (s)	43.6	21.7	0.5	0.1								
Approach LOS	E	C										
Intersection Summary												
Average Delay			3.9									
Intersection Capacity Utilization			49.1%			ICU Level of Service			A			
Analysis Period (min)			15									



Lane Group	WBL	WBR	WBR2	NBT	NBR	NBR2	SBL2	SBL	SBT	SWL2	SWL	SWR
Lane Configurations												
Volume (vph)	187	107	6	429	41	144	2	94	486	27	41	3
Satd. Flow (prot)	1753	1561	0	1706	0	0	0	0	3088	0	1913	0
Flt Permitted	0.950								0.586		0.954	
Satd. Flow (perm)	1753	1561	0	1706	0	0	0	0	1824	0	1895	0
Satd. Flow (RTOR)				16							1	
Confl. Peds. (#/hr)		1	9		9	3	9	3		3		1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	5%	2%	2%	5%	2%	5%	2%	5%	5%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	205	125	0	674	0	0	0	0	639	0	78	0
Turn Type		Prot					Perm	Perm		Split		
Protected Phases	13	13		27					6	15	15	
Permitted Phases							6	6	6			
Total Split (s)	31.0	31.0	0.0	94.0	0.0	0.0	66.0	66.0	66.0	31.0	31.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	4.0	4.0	6.0	6.0	6.0	6.0	6.0	4.0
Act Effct Green (s)	22.0	22.0		83.8					60.4		10.8	
Actuated g/C Ratio	0.16	0.16		0.62					0.45		0.08	
v/c Ratio	0.72	0.49		0.63					0.78		0.50	
Control Delay	69.2	59.7		3.4					41.7		71.9	
Queue Delay	0.0	0.0		0.5					0.0		0.0	
Total Delay	69.2	59.7		3.9					41.7		71.9	
LOS	E	E		A					D		E	
Approach Delay	65.6			3.9					41.7		71.9	
Approach LOS	E			A					D		E	
Queue Length 50th (ft)	174	102		21					261		68	
Queue Length 95th (ft)	278	178		28					#402		125	
Internal Link Dist (ft)	384			71					598		497	
Turn Bay Length (ft)		155										
Base Capacity (vph)	327	292		1127					817		358	
Starvation Cap Reductn	0	0		139					0		0	
Spillback Cap Reductn	0	0		0					0		0	
Storage Cap Reductn	0	0		0					0		0	
Reduced v/c Ratio	0.63	0.43		0.68					0.78		0.22	

Intersection Summary

Cycle Length: 156

Actuated Cycle Length: 134.8

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 32.8

Intersection LOS: C

Intersection Capacity Utilization 88.0%

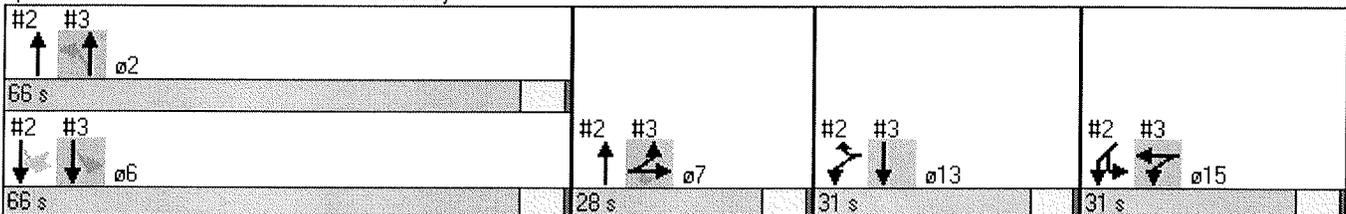
ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2: Bedford Road & North Broadway



Lane Group	ø2	ø7
Lane Configurations		
Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Confl. Peds. (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	2	7
Permitted Phases		
Total Split (s)	66.0	28.0
Total Lost Time (s)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

Lane Group	WBL	WBR	WBR2	NBT	NBR	NBR2	SBL2	SBL	SBT	SWL2	SWL	SWR
Lane Configurations												
Volume (vph)	216	108	6	439	42	185	2	94	494	27	44	3
Satd. Flow (prot)	1753	1561	0	1693	0	0	0	0	3088	0	1913	0
Flt. Permitted	0.950								0.553		0.954	
Satd. Flow (perm)	1753	1561	0	1693	0	0	0	0	1721	0	1895	0
Satd. Flow (RTOR)				20							1	
Confl. Peds. (#/hr)		1	9		9	3	9	3		3		1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	5%	2%	2%	5%	2%	5%	2%	5%	5%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	237	126	0	731	0	0	0	0	648	0	81	0
Turn Type		Prot					Perm	Perm		Split		
Protected Phases	13	13		27					6	15	15	
Permitted Phases							6	6	6			
Total Split (s)	31.0	31.0	0.0	94.0	0.0	0.0	66.0	66.0	66.0	31.0	31.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	4.0	4.0	6.0	6.0	6.0	6.0	6.0	4.0
Act Effct Green (s)	23.7	23.7		86.2					60.2		11.2	
Actuated g/C Ratio	0.17	0.17		0.62					0.43		0.08	
v/c Ratio	0.80	0.48		0.69					0.87		0.52	
Control Delay	75.8	59.7		4.5					50.9		73.8	
Queue Delay	0.0	0.0		0.8					0.0		0.0	
Total Delay	75.8	59.7		5.3					50.9		73.8	
LOS	E	E		A					D		E	
Approach Delay	70.2			5.3					50.9		73.8	
Approach LOS	E			A					D		E	
Queue Length 50th (ft)	212	106		22					290		73	
Queue Length 95th (ft)	#350	180		53					#435		129	
Internal Link Dist (ft)	384			71					598		497	
Turn Bay Length (ft)		155										
Base Capacity (vph)	316	281		1082					745		346	
Starvation Cap Reductn	0	0		132					0		0	
Spillback Cap Reductn	0	0		0					0		0	
Storage Cap Reductn	0	0		0					0		0	
Reduced v/c Ratio	0.75	0.45		0.77					0.87		0.23	

Intersection Summary

Cycle Length: 156

Actuated Cycle Length: 139.1

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 37.5

Intersection LOS: D

Intersection Capacity Utilization 92.6%

ICU Level of Service F

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2: Bedford Road & North Broadway

#2 	#3 						
ø2							
66 s							
#2 	#3 	#2 	#3 	#2 	#3 	#2 	#3
ø6		ø7		ø13		ø15	
66 s		28 s		31 s		31 s	

Lane Group	ø2	ø7
Lane Configurations		
Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Confl. Peds. (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	2	7
Permitted Phases		
Total Split (s)	66.0	28.0
Total Lost Time (s)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		



Lane Group	WBL	WBR	WBR2	NBT	NBR	NBR2	SBL2	SBL	SBT	SWL2	SWL	SWR
Lane Configurations												
Volume (vph)	216	111	6	454	42	185	2	95	504	27	44	4
Satd. Flow (prot)	1753	1561	0	1696	0	0	0	0	3088	0	1910	0
Flt Permitted	0.950								0.545		0.955	
Satd. Flow (perm)	1753	1561	0	1696	0	0	0	0	1697	0	1893	0
Satd. Flow (RTOR)				20							1	
Confl. Peds. (#/hr)		1	9		9	3	9	3		3		1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	5%	2%	2%	5%	2%	5%	2%	5%	5%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	237	129	0	748	0	0	0	0	660	0	82	0
Turn Type		Prot					Perm	Perm		Split		
Protected Phases	13	13		27					6	15	15	
Permitted Phases							6	6	6			
Total Split (s)	31.0	31.0	0.0	94.0	0.0	0.0	66.0	66.0	66.0	31.0	31.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	4.0	4.0	6.0	6.0	6.0	6.0	6.0	4.0
Act Effct Green (s)	23.6	23.6		86.4					60.2		11.3	
Actuated g/C Ratio	0.17	0.17		0.62					0.43		0.08	
v/c Ratio	0.80	0.49		0.71					0.90		0.53	
Control Delay	76.1	60.3		4.7					54.7		74.0	
Queue Delay	0.0	0.0		1.0					0.0		0.0	
Total Delay	76.1	60.3		5.6					54.7		74.0	
LOS	E	E		A					D		E	
Approach Delay	70.6			5.6					54.7		74.0	
Approach LOS	E			A					D		E	
Queue Length 50th (ft)	212	109		22					301		73	
Queue Length 95th (ft)	#351	184		58					#454		130	
Internal Link Dist (ft)	384			71					598		497	
Turn Bay Length (ft)		155										
Base Capacity (vph)	316	281		1082					733		344	
Starvation Cap Reductn	0	0		132					0		0	
Spillback Cap Reductn	0	0		0					0		0	
Storage Cap Reductn	0	0		0					0		0	
Reduced v/c Ratio	0.75	0.46		0.79					0.90		0.24	

Intersection Summary

Cycle Length: 156
 Actuated Cycle Length: 139.4
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.90
 Intersection Signal Delay: 38.9
 Intersection LOS: D
 Intersection Capacity Utilization 93.7%
 ICU Level of Service F
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 2: Bedford Road & North Broadway

#2 ↑ #3 ↑ ø2 66 s	#2 ↑ #3 ↘ ø7 28 s	#2 ↘ #3 ↓ ø13 31 s	#2 ↘ #3 ↘ ø15 31 s
----------------------------------	----------------------------------	-----------------------------------	-----------------------------------

Lane Group	ø2	ø7
Lane Configurations		
Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Confl. Peds. (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	2	7
Permitted Phases		
Total Split (s)	66.0	28.0
Total Lost Time (s)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

Existing SAT

3: Beekman Avenue & North Broadway

Project # 111229



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	118	4	108	0	4	1	48	464	6	3	523	111
Satd. Flow (prot)	0	1800	1350	0	1869	0	0	1901	0	0	3321	0
Flt Permitted		0.954						0.883			0.953	
Satd. Flow (perm)	0	1757	1224	0	1869	0	0	1685	0	0	3165	0
Satd. Flow (RTOR)			100		1						25	
Confl. Peds. (#/hr)	7		21	21		7	16		19	19		16
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	5%	2%	2%	5%	2%
Parking (#/hr)			0						0			
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	127	112	0	5	0	0	539	0	0	664	0
Turn Type	Split		Perm	Split			Perm			custom		
Protected Phases	7	7		15	15			2				6.13
Permitted Phases			7				2			6		
Total Split (s)	28.0	28.0	28.0	31.0	31.0	0.0	66.0	66.0	0.0	66.0	97.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0	4.0
Act Effct Green (s)		17.4	17.4		10.8			60.4			82.4	
Actuated g/C Ratio		0.13	0.13		0.08			0.45			0.61	
v/c Ratio		0.55	0.46		0.03			0.71			0.34	
Control Delay		65.1	19.2		54.8			38.9			1.8	
Queue Delay		0.0	0.0		0.0			0.0			0.8	
Total Delay		65.1	19.2		54.8			38.9			2.6	
LOS		E	B		D			D			A	
Approach Delay		43.6			54.8			38.9			2.6	
Approach LOS		D			D			D			A	
Queue Length 50th (ft)		108	10		3			401			19	
Queue Length 95th (ft)		182	70		18			598			35	
Internal Link Dist (ft)		289			328			376			71	
Turn Bay Length (ft)			80									
Base Capacity (vph)		296	285		350			755			2018	
Starvation Cap Reductn		0	0		0			0			997	
Spillback Cap Reductn		0	0		0			0			0	
Storage Cap Reductn		0	0		0			0			0	
Reduced v/c Ratio		0.43	0.39		0.01			0.71			0.65	

Intersection Summary

Cycle Length: 156

Actuated Cycle Length: 134.8

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 23.1

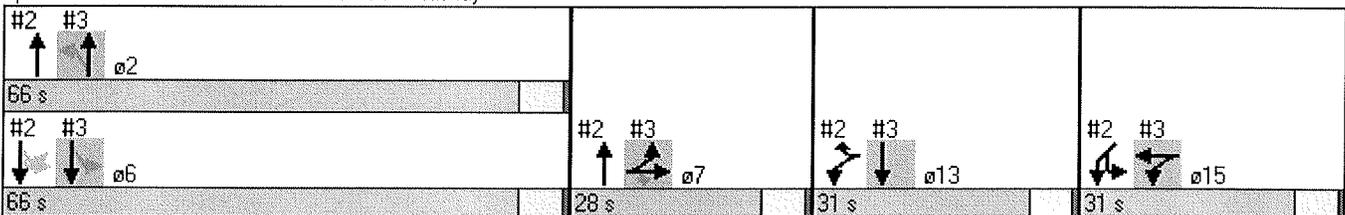
Intersection LOS: C

Intersection Capacity Utilization 74.2%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 3: Beekman Avenue & North Broadway



Lane Group	ø13
Lane Configurations	
Volume (vph)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Parking (#/hr)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Total Split (s)	31.0
Total Lost Time (s)	
Act Effect Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

No-Build SAT

3: Beekman Avenue & North Broadway

Project # 111229

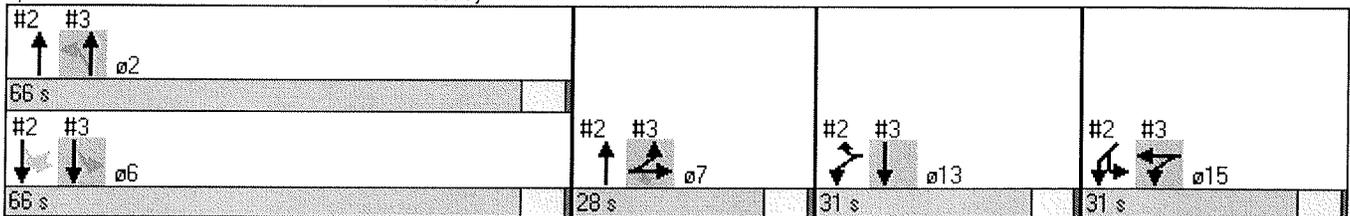


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↕			↕			↕	↕
Volume (vph)	168	4	110	0	4	1	50	466	6	3	526	148
Satd. Flow (prot)	0	1798	1350	0	1869	0	0	1903	0	0	3291	0
Flt Permitted		0.953						0.871			0.954	
Satd. Flow (perm)	0	1754	1224	0	1869	0	0	1664	0	0	3139	0
Satd. Flow (RTOR)			72		1						36	
Confl. Peds. (#/hr)	7		21	21		7	16		19	19		16
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	5%	2%	2%	5%	2%
Parking (#/hr)			0						0			
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	179	115	0	5	0	0	543	0	0	705	0
Turn Type	Split		Perm	Split			Perm			custom		
Protected Phases	7	7		15	15			2				6 13
Permitted Phases			7				2			6		
Total Split (s)	28.0	28.0	28.0	31.0	31.0	0.0	66.0	66.0	0.0	66.0	97.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0	4.0
Act Effct Green (s)		19.9	19.9		11.2			60.2			83.9	
Actuated g/C Ratio		0.14	0.14		0.08			0.43			0.60	
v/c Ratio		0.69	0.49		0.03			0.75			0.37	
Control Delay		72.2	30.5		54.8			42.6			1.9	
Queue Delay		0.0	0.0		0.0			0.0			1.5	
Total Delay		72.2	30.5		54.8			42.7			3.4	
LOS		E	C		D			D			A	
Approach Delay		55.9			54.8			42.7			3.4	
Approach LOS		E			D			D			A	
Queue Length 50th (ft)		158	35		4			427			20	
Queue Length 95th (ft)		249	103		18			613			m38	
Internal Link Dist (ft)		289			328			376			71	
Turn Bay Length (ft)			80									
Base Capacity (vph)		286	255		338			720			1939	
Starvation Cap Reductn		0	0		0			0			990	
Spillback Cap Reductn		0	0		0			3			0	
Storage Cap Reductn		0	0		0			0			0	
Reduced v/c Ratio		0.63	0.45		0.01			0.76			0.74	

Intersection Summary

Cycle Length: 156
 Actuated Cycle Length: 139.1
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.87
 Intersection Signal Delay: 27.3
 Intersection Capacity Utilization 78.6%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service D
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Beekman Avenue & North Broadway



Lane Group	ø13
Lane Configurations	
Volume (vph)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Parking (#/hr)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Total Split (s)	31.0
Total Lost Time (s)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	174	4	110	0	4	1	50	476	6	3	531	152
Satd. Flow (prot)	0	1798	1350	0	1869	0	0	1903	0	0	3290	0
Flt Permitted		0.953						0.871			0.953	
Satd. Flow (perm)	0	1754	1224	0	1869	0	0	1664	0	0	3136	0
Satd. Flow (RTOR)			70		1						37	
Confl. Peds. (#/hr)	7		21	21		7	16		19	19		16
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	5%	2%	2%	5%	2%
Parking (#/hr)			0						0			
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	185	115	0	5	0	0	554	0	0	714	0
Turn Type	Split		Perm	Split			Perm			custom		
Protected Phases	7	7		15	15			2				6.13
Permitted Phases			7				2			6		
Total Split (s)	28.0	28.0	28.0	31.0	31.0	0.0	66.0	66.0	0.0	66.0	97.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0	4.0
Act Effct Green (s)		20.2	20.2		11.3			60.2			83.8	
Actuated g/C Ratio		0.14	0.14		0.08			0.43			0.60	
v/c Ratio		0.71	0.49		0.03			0.77			0.38	
Control Delay		73.3	31.4		54.8			43.7			1.9	
Queue Delay		0.0	0.0		0.0			0.1			1.6	
Total Delay		73.3	31.4		54.8			43.8			3.6	
LOS		E	C		D			D			A	
Approach Delay		57.2			54.8			43.8			3.6	
Approach LOS		E			D			D			A	
Queue Length 50th (ft)		164	37		4			441			20	
Queue Length 95th (ft)		258	105		18			631			m37	
Internal Link Dist (ft)		289			328			376			71	
Turn Bay Length (ft)			80									
Base Capacity (vph)		285	253		337			719			1933	
Starvation Cap Reductn		0	0		0			0			993	
Spillback Cap Reductn		0	0		0			3			0	
Storage Cap Reductn		0	0		0			0			0	
Reduced v/c Ratio		0.65	0.45		0.01			0.77			0.76	

Intersection Summary

Cycle Length: 156

Actuated Cycle Length: 139.4

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 28.1

Intersection LOS: C

Intersection Capacity Utilization 79.7%

ICU Level of Service D

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Beekman Avenue & North Broadway

#2 ↑ #3 ↑ ø2			
66 s			
#2 ↓ #3 ↓ ø6	#2 ↑ #3 ↘ ø7	#2 ↘ #3 ↓ ø13	#2 ↙ #3 ↘ ø15
66 s	28 s	31 s	31 s

Lane Group	ø13
Lane Configurations	
Volume (vph)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Parking (#/hr)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Total Split (s)	31.0
Total Lost Time (s)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	